

Notice of Allowability

Application No.

10/625,535

Examiner

Alan Diamond

Applicant(s)

MURATA ET AL.

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Interview Summary that occurred on December 5, 2005.
2. ☒ The allowed claim(s) is/are 1,4-6 and 8.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 12122005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. James Edmondson on December 5, 2005.

The application has been amended as follows:

Please note that the Amendment After Final filed 11/17/2005 has now been entered.

In The Claims

In claim 6, at line 3, please delete "an".

Please cancel claim 7.

In claim 8, at line 2, please delete "7" and insert in its place --6--.

2. The following is an examiner's statement of reasons for allowance: The thermophotovoltaic generator in instant independent claims 1 and 6 is not taught or suggested by the prior art. In particular, the claimed combination of features in the thermophotovoltaic generator, including the recited burner, emitter, photoelectric conversion cell, cell holder, cooling device, cooling chamber, and cooling liquid comprising at least two kinds of liquids, a first of the two kinds having a greater specific gravity and a lower boiling point than a second of the at least two kinds of liquid; a surface of the cell holder portion that contacts the cooling liquid is a non-horizontal

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surface; wherein the first liquid is provided at a lower level than the second liquid; wherein when the first liquid boils, a first portion of a first vapor therefrom absorbs heat from the second liquid; and a second portion of the first vapor is cooled in the cooling chamber and returns to the lower level as liquid. Kushch et al (U.S. Patent 5,711,661) teaches a thermophotovoltaic generator having a water cooled heat sink (69) that provides the cooling liquid to a non-horizontal surface for cooling (see Figure 5). It is true that heat transfer fluid mixtures are known in the art (see Silversmith U.S. Patent 3,237,683). However, it would not have been obvious to modify Kushch et al firstly to use the recited first and second cooling liquid, and secondly to supply the first liquid at a lower level than the second liquid, wherein when the first liquid boils, a first portion of a first vapor therefrom absorbs heat from the second liquid; and wherein a second portion of the first vapor is cooled in the cooling chamber and returns to the lower level as liquid. The instant apparatus provides for enhanced cooling and further improved energy conversion efficiency (see paragraph 0039 of the specification).

US 2004/0244830 and US 2005/0074646 are hereby made of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-

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1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
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A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.

Alan Diamond
December 12, 2005